

IN THE CLAIMS

The pending claims, including amended and new claims, are as follows:

1. (Previously presented) An implant comprising a body having an inner sheath and at least one outer sheath, each sheath being formed from a different bone and being formed with an exterior surface and an opening defining an interior surface, wherein the exterior surface of each outer sheath contacts the interior surface of no more than one other outer sheath.
2. (Original) The implant of claim 1, further comprising a core disposed in the inner sheath and formed from a bone other than the bones of the sheaths.
3. (Original) The implant of claim 2, wherein the core is formed of cancellous bone and at least one sheath is formed of cortical bone.
4. (Original) The implant of claim 2, wherein at least one sheath is formed of cancellous bone and the core is formed of cortical bone.
5. (Original) The implant of claim 2, wherein the bones comprise at least one of autograft, allograft, and xenograft bone tissue.
6. (Original) The implant of claim 5, wherein the bone tissue of at least one bone is partially demineralized or demineralized.
7. (Original) The implant of claim 2, wherein the body comprises a cross-section of the sheaths and core, the cross-section including at least a portion of each sheath and core.
8. (Original) The implant of claim 7, wherein the sheaths and core are coupled together with at least one fastener.
9. (Original) The implant of claim 8, wherein the at least one fastener is selected from a screw, key, pin, peg, rivet, cotter, nail, spike, bolt, stud, staple, boss, clamp, clip, dowel, stake, hook, anchor, tie, band, crimp, and wedge.

10. (Original) The implant of claim 8, wherein the at least one fastener intersects each of the sheaths and core.

11. (Original) The implant of claim 7, wherein at least two of the sheaths and core are bonded together with a bonding agent.

12. (Original) The implant of claim 2, wherein at least one of the inner sheath, an outer sheath, and the core is at least partially dehydrated to fit against a surrounding mating surface.

13. (Original) The implant of claim 2, wherein at least one of the inner sheath, an outer sheath, and the core is at least partially dehydrated to fit within a surrounding inner sheath or outer sheath having a greater moisture content.

14. (Original) The implant of claim 1, wherein contacting surfaces of adjacent sheaths are machined surfaces so that the contour of the contacting surfaces is about the same.

15. (Original) The implant of claim 14, wherein the machined surfaces permit press-fitting of one sheath into another sheath.

16. (Original) The implant of claim 1, wherein the bones are selected from a femur, tibia, humerus, fibula, ulna, and radius.

17. (Original) The implant of claim 1, further comprising at least one supplemental sheath having an interior surface and an exterior surface, wherein the exterior surface of each supplemental sheath contacts the interior surface of no more than one other sheath and the interior surface of each supplemental sheath contacts the exterior surface of no more than one other sheath, wherein the at least one supplemental sheath is formed of a material selected from metals, alloys, ceramics, polymers, and composites.

18. (Original) The implant of claim 1, wherein at least one sheath is packed with bone growth materials.

19. (Original) The implant of claim 1, wherein at least one sheath further comprises alignment indicia.

20. (Original) The implant of claim 1, wherein the exterior surface is spaced from a portion of the interior surface.

21. (Original) An implant comprising a body formed from a cross-section of a core and a plurality of sheaths with each sheath having an inner surface and an outer surface, wherein at least two sheaths are formed from different bones, the outer surface of a first sheath has about the same contour as the inner surface of a second sheath so that the first and second sheaths mate together, and the cross-section includes at least a portion of each sheath and core.

22. (Original) The implant of claim 21, wherein the core is formed from a bone other than the bones of the sheaths.

23. (Original) The implant of claim 22, wherein the core is formed of cancellous bone and at least one sheath is formed of cortical bone.

24. (Original) The implant of claim 22, wherein at least one sheath is formed of cancellous bone and the core is formed of cortical bone.

25. (Original) The implant of claim 22, wherein the bones comprise at least one of autograft, allograft, and xenograft bone tissue.

26. (Original) The implant of claim 25, wherein the bone tissue of at least one bone is partially demineralized or demineralized.

27. (Original) The implant of claim 22, wherein the sheaths and core are coupled together with at least one fastener.

28. (Original) The implant of claim 27, wherein the at least one fastener is selected from a screw, key, pin, peg, rivet, cotter, nail, spike, bolt, stud, staple, boss, clamp, clip, dowel, stake, hook, anchor, tie, band, crimp, and wedge.

29. (Original) The implant of claim 27, wherein the at least one fastener intersects each of the sheaths and core.

30. (Original) The implant of claim 22, wherein the sheaths and core are bonded together with a bonding agent.

31. (Original) The implant of claim 22, wherein at least one of the first sheath, second sheath, and core is at least partially dehydrated to fit against a surrounding mating surface.

32. (Original) The implant of claim 22, wherein at least one of the first sheath, second sheath, and core is at least partially dehydrated to fit within a surrounding first sheath or second sheath.

33. (Original) The implant of claim 21, wherein contacting surfaces of adjacent sheaths are machined surfaces so that the contour of the contacting surfaces is about the same.

34. (Original) The implant of claim 33, wherein the machined surfaces permit press-fitting of one sheath into another sheath.

35. (Original) The implant of claim 21, wherein the bones are selected from a femur, tibia, humerus, fibula, ulna, and radius.

36. (Original) The implant of claim 21, further comprising at least one supplemental sheath having an interior surface and an exterior surface, wherein the exterior surface of each supplemental sheath contacts the interior surface of no more than one other sheath and the interior surface of each supplemental sheath contacts the exterior surface of no more than one other sheath, wherein the at least one supplemental sheath is formed of a material selected from metals, alloys, ceramics, polymers, and composites.

37. (Original) The implant of claim 21, wherein at least one sheath is packed with bone growth materials.

38. (Original) The implant of claim 21, wherein at least one sheath further comprises alignment indicia.

39. (Original) The implant of claim 21, wherein the outer surface is separated from a portion of the inner surface.

40. (Previously presented) An implant comprising a plurality of sheaths each defining a hole, and a core fit in an innermost of the sheaths, wherein the sheaths are formed from at least two different bones selected from a femur, tibia, humerus, fibula, ulna, and radius.

41. (Currently amended) An implant comprising at least two layers of bone components coupled to each other, the components together defining at least one securing region, and at least one insertable securing element adapted for placement in the at least one securing region, wherein the implant is formed from at least two different bones selected from a femur, tibia, humerus, fibula, ulna, and radius.

42. (Original) The implant of claim 41, wherein the at least one securing region is a recess or hole.

43. (Original) The implant of claim 42, wherein the insertable securing element is a screw, key, pin, peg, rivet, cotter, nail, spike, bolt, stud, staple, boss, clamp, clip, dowel, stake, hook, anchor, tie, band, crimp, or wedge.

44. (Original) The implant of claim 42, wherein each layer is formed from a different bone selected from a femur, tibia, humerus, fibula, ulna, and radius.

45. (Original) The implant of claim 44, wherein at least one layer is formed of cancellous bone and at least one layer is formed of cortical bone.

46. (Original) The implant of claim 45, wherein the layers comprise at least one of autograft, allograft, and xenograft bone tissue.

47. (Original) The implant of claim 46, wherein the bone tissue of at least one bone is partially demineralized or demineralized.

48. (Original) The implant of claim 42, wherein the layers are bonded together with a bonding agent.

49. (Original) The implant of claim 42, wherein a first layer is at least partially dehydrated to mate against at least one other layer.

50. (Original) The implant of claim 42, wherein adjacent layers are provided with mutually contacting surfaces that are machined to have about the same contour.

51. (Original) The implant of claim 42, wherein the contacting surfaces of adjacent layers are press-fit together.

52. (Original) The implant of claim 42, further comprising at least one supplemental layer coupled to at least one of the layers of bone components, wherein the at least one supplemental layer is formed of a material selected from metals, alloys, ceramics, polymers, and composites.

53. (Original) The implant of claim 41, wherein the implant further comprises a chamber packed with bone growth materials.

54. (Original) The implant of claim 41, wherein at least one layer further comprises alignment indicia.

55. (Canceled)

56. (New) An implant comprising a body having two outer annular members and at least one inner annular member, wherein at least one of the annular members is formed from bone and the annular members are coupled together to define a central opening.

102/103 Boyce Fig. 2 Col. 6:1-18 +

57. (New) The implant of claim 56, wherein each annular member has at least one surface that is press-fit with the surface of another annular member.

102/103 Col. 4:1-20

58. (New) The implant of claim 57, wherein the outside diameter of the outer annular members is smaller than the outside diameter of the at least one inner annular member.

103 Col. 6:1-18 (any number of annular members)

59. (New) The implant of claim 57, wherein the implant is symmetrical about an innermost annular member, the diameter of the implant progressively decreasing from the innermost annular member to each outer annular member.

103 Col. 6:1-18

60. (New) The implant of claim 57, wherein the central opening is packed with at least one of bone material and bone inducing substances.

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Col. 4:53-61

61. (New) The implant of claim 57, wherein at least one annular member is formed of cancellous bone and at least one annular member is formed of cortical bone.

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62. (New) The implant of claim 57, wherein the annular member bones comprise at least one of autograft, allograft, and xenograft bone tissue.

103 Col. 5:40-45

63. (New) The implant of claim 62, wherein the bone tissue of at least one bone is partially demineralized or demineralized.

102/103 Col. 5:40-45
Col. 6:1-20

64. (New) The implant of claim 57, wherein a plurality of annular members are coupled together with at least one fastener.

102/103 Col. 6:1-20
Col. 4:1-20

65. (New) The implant of claim 64, wherein the at least one fastener is selected from a screw, key, pin, peg, rivet, cotter, nail, spike, bolt, stud, staple, boss, clamp, clip, dowel, stake, hook, anchor, tie, band, crimp, and wedge.

102/103 Col. 6:1-20

66. (New) The implant of claim 57, wherein a plurality of annular members are bonded together with a bonding agent.

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67. (New) The implant of claim 57, wherein at least one of the annular members is at least partially dehydrated to fit against a surrounding mating surface.

103 where

68. (New) The implant of claim 57, wherein at least one of the annular members is at least partially dehydrated to mate with another annular member.

103 where

69. (New) The implant of claim 56, wherein contacting surfaces of adjacent annular members are machined surfaces so that the contour of the contacting surfaces is about the same.

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70. (New) The implant of claim 69, wherein the machined surfaces permit press-fitting of one sheath into another sheath.

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71. (New) The implant of claim 56, wherein the annular member bones are selected from a femur, tibia, humerus, fibula, ulna, and radius.

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72. (New) The implant of claim 56, wherein the annular members are non-circular.

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73. (New) The implant of claim 72, wherein the annular members are generally oblong.

103 Cal. 4:1-20

74. (New) The implant of claim 56, further comprising at least one supplemental annular member coupled to at least one of the annular members formed from bone, wherein the at least one supplemental annular member is formed of a material selected from metals, alloys, ceramics, polymers, and composites.

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75. (New) The implant of claim 56, wherein at least one annular member further comprises alignment indicia.

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(prior art)

76. (New) The implant of claim 56, wherein adjacent surfaces of at least two annular members do not completely contact each other.

77. (New) An implant comprising a body having at least two ring-shaped members formed from bone that are coupled together to define a central opening.

102 Cal. 4:1-20

78. (New) The implant of claim 77, wherein the ring-shaped members have surfaces that mate and press-fit together.

102 Cal. 4:1-20